

### **Amendments to the Claims:**

This listing of claims replaces all prior versions and listings of claims in the application:

Claims 1-26 (canceled)

27. (Currently amended) ~~An identification tag for application to objects comprising in combination:~~

- ~~an application-specific integrated circuit die having;~~
- ~~—— a signal receiving system for receiving data containing information and programming into an integrated circuit;~~
- ~~—— a data processing system for reading out information from the integrated circuit;~~
- ~~—— a first dipole antenna for receiving radio-wave energy;~~
- ~~—— a power storage means for storing the radio-wave energy received by the first dipole antenna and for supplying energy to the integrated circuit; and~~
- ~~—— a second dipole antenna for transmitting information from the integrated circuit to a receiver. A tag comprising an integrated circuit that includes:~~
  - a first antenna that receives an electromagnetic wave;
  - a signal receiving system that receives and stores input data derived from the wave;
  - a separate power storage component that receives and stores the energy for use in powering the integrated circuit;
  - a data processing system that produces output data from the input data; and
  - a second antenna that transmits at least a portion of the output data externally to the tag.

28. (Currently amended) ~~An identification tag for application to objects comprising in combination:~~

- ~~—— an application-specific integrated circuit on a die having;~~

~~—— a signal receiving system for receiving data containing information and programming into an integrated circuit,~~

~~—— a data processing system for reading out information from the integrated circuit,~~

~~—— a dipole antenna for receiving radio wave energy and transmitting information from the integrated circuit to a receiver not located on the die, and~~

~~—— a power storage means for storing the radio wave energy received by the dipole antenna and for supplying energy to the integrated circuit,~~

~~—— wherein all components are located on the die.~~ A tag comprising an integrated circuit that includes:

a first antenna that receives an electromagnetic wave;

a separate power storage component that receives and stores the energy for use in powering the integrated circuit;

a data processing system that produces output data; and

a second antenna that transmits at least a portion of the output data externally to the tag.

29 - 31. (Canceled)

32. (Canceled)

33. (Currently amended) The ~~identification-tag~~ of claim 27, wherein ~~energy is received from sources selected from the group consisting of microwaves, infrared, visible light and the wave~~ has a wavelength within a spectrum of the wavelengths from radio waves to ultraviolet light.

34. (Currently amended) The ~~identification-tag~~ of claim 27, ~~wherein a write control component contains at least one memory section for storing information further comprising~~ a memory section that stores at least one of the input data and the output data.

35. (Currently amended) The ~~identification-tag~~ of claim 34, wherein the memory section is a nonvolatile memory.

36. (Currently amended) The ~~identification-tag~~ of claim 27, ~~wherein at least one multiplexer controls flow of information and data~~ further comprising a multiplexer that controls a flow of the input data.

37. (Currently amended) The ~~identification-tag~~ of claim 27, , ~~wherein at least one pulse generating circuit is used~~ further comprising a pulse generating circuit.

38. (Currently amended) The ~~identification-tag~~ of claim 27, wherein ~~information received the~~ input data is in analog form.

39. (Currently amended) The ~~identification-tag~~ of claim 27, wherein ~~information received the~~ input data is in digital form.

40. (Currently amended) The ~~identification-tag~~ of claim 27, wherein ~~information transmitted the output data~~ is in analog form.

41. (Currently amended) The ~~identification-tag~~ of claim 27, wherein ~~information transmitted the output data~~ is in digital form.

42. (Currently amended) The ~~identification-tag~~ of claim 27, ~~wherein there is at least one~~ further comprising a clock generator circuit.

43. (Currently amended) The ~~identification-tag~~ of claim 27, ~~wherein there is at least one~~ further comprising a shift register circuit.

44. (Currently amended) The ~~identification-tag~~ of claim 27, wherein the ~~dipole-second antenna component for transmitting information~~ is a backscatter type antenna.

45. (Currently amended) The ~~identification-tag~~ of claim 27, wherein the integrated circuit is built onto material selected from the group consisting of silicone, germanium, GaAs, sapphire, and diamond.

46. (Currently amended) The ~~identification-tag~~ of claim 27, ~~wherein the integrated circuit contains~~ further comprising test and monitoring points and pads.

47. (Currently amended) The ~~identification-tag of claim 27, wherein the integrated circuit contains further comprising~~ a test and monitoring control circuitry.
48. (Currently amended) The ~~identification-tag of claim 27, wherein the integrated circuit contains further comprising~~ circuits for logic, sequencing and switching.
49. (Currently amended) The ~~identification-tag of claim 28, further comprising at least one dipole antenna for receiving radio wave energy wherein the wave has a wavelength within a spectrum of the wavelengths from radio waves to ultraviolet light.~~
50. (Currently amended) The ~~identification-tag of claim 27, further comprising least one dipole antenna for receiving radio energy which is used for receiving radio wave energy wherein the first antenna comprises~~ a dipole antenna.
51. (Currently amended) The ~~identification-tag of claim 27, wherein there is at least one dipole antenna for transmitting information from the application specific integrated circuit both first and second antennas comprise~~ dipole antennas.
52. (Currently amended) The ~~identification-tag of claim 51, wherein the dipole antenna for transmitting information is powered by at least one charge storage component which stores energy second antenna is powered entirely by the energy stored by the power storage component.~~
53. (Canceled)
54. (Currently amended) The ~~identification-tag of claim 28, wherein a write control component contains at least one memory section for storing information further comprising a memory section that stores~~ the output data.
55. (Currently amended) The ~~identification-tag of claim 54, wherein the memory section is a~~ nonvolatile memory.
56. (Currently amended) The ~~identification-tag of claim 28, wherein at least one further comprising a multiplexer that controls a flow of information and the output data~~

57. (Currently amended) The ~~identification-tag~~ of claim 28, ~~wherein at least one further~~  
comprising a pulse generating circuit is used.
58. (Currently amended) The ~~identification-tag~~ of claim 28, ~~wherein information received is~~  
further comprising a circuitry that receives input data in analog form.
59. (Currently amended) The ~~identification-tag~~ of claim 28, ~~wherein information received the~~  
input data is in digital form.
60. (Currently amended) The ~~identification-tag~~ of claim 28, ~~wherein information received the~~  
output data is in analog form.
61. (Currently amended) The ~~identification-tag~~ of claim 28, ~~wherein information transmitted~~  
the output data is in digital form.
62. (Currently amended) The ~~identification-tag~~ of claim 28, further comprising ~~at least one~~a  
clock generator circuit.
63. (Currently amended) The ~~identification-tag~~ of claim 28, further comprising ~~at least one~~a  
shift register circuit.
64. (Currently amended) The ~~identification-tag~~ of claim 51, wherein the ~~dipole~~second  
antenna ~~for transmitting information~~ is a backscatter type antenna.
65. (Currently amended) The ~~identification-tag~~ of claim 28, wherein the integrated circuit is  
built onto different materials selected from the group consisting of silicone, germanium, GaAs,  
sapphire, or diamond.
66. (Currently amended) The ~~identification-tag~~ of claim 28, ~~wherein the integrated circuit~~  
~~contains~~ further comprising test and monitoring points and pads.
67. (Currently amended) The ~~identification-tag~~ of claim 28, ~~wherein the integrated circuit~~  
~~contains~~ further comprising test and monitoring control circuitry.

68. (Currently amended) The ~~identification~~-tag of claim 28, ~~wherein the integrated circuit contains further comprising~~ circuits for logic, sequencing and switching.

69. (Currently amended) ~~An~~The ~~identification~~-tag according to claim 27, wherein said dipole antenna for receiving radio wave energy the first antenna is tuned for a frequency between 10 GHz and 16 GHz to a frequency from radio waves to ultra violet, inclusive.

70. (Currently amended) ~~An~~The ~~identification~~-tag according to claim 28, wherein said dipole antenna for receiving radio wave energy the second antenna is tuned for a frequency between 10 GHz and 16 GHz to a frequency from radio waves to ultra violet, inclusive.

71. (Currently amended) ~~An~~The ~~identification~~-tag of claim 27 wherein the application specific integrated circuit is a monolithic circuit, ~~wherein there is a signal receiving system for receiving data containing information from said first dipole antenna; wherein there is a data storage system on the integrated circuit for storing data received; and wherein the second dipole antenna transmits information from the integrated circuit storage system to a receiver~~the first antenna supplies power to both the integrated circuit and the second antenna, and further comprising a memory that stores at least one of the input data and the output data.

72. (Currently amended) ~~An~~The ~~identification~~-tag of claim 28 wherein said application specific ~~the integrated circuit is a monolithic device, and wherein said dipole antenna supplies energy to the integrated circuit and also power to the antenna~~the first antenna supplies power to both the integrated circuit and the second antenna, and further comprising a memory that stores at least one of the input data and the output data.

73. (Currently amended) The ~~identification~~-tag of claim 27, ~~wherein further comprising a data processing system that processes the input data stored on the integrated circuit to make decisions and take actions to produce at least one of a decision and an take action.~~

74. (Currently amended) The ~~identification~~-tag of claim 28, ~~wherein further comprising a data processing system that processes the input data stored on the integrated circuit to make decisions and take actions to produce at least one of a decision and an take action.~~

75. (New) An electronic tag comprising:  
a first antenna that receives an electromagnetic wave from an interrogator, and converts the wave into electrical energy that charges a capacitor to supply power;  
a first antenna that receives and stores an input signal containing input data;  
an information processing circuit that utilizes the power to produce an output data;  
a second antenna; and  
a driver circuit that utilizes the second antenna to modulate and reflect the wave to send the output data to a receiver.
76. (New) The tag of claim 75 wherein the tag is powered entirely by electrical energy received by the first antenna..
77. (New) The tag of claim 75 wherein the first antenna comprises a dipole antenna.
78. (New) The tag of claim 75 wherein the second antenna comprises a dipole antenna.
- 79 (New) The tag of claim 75 where the first and second antenna are positioned on opposite ends of the tag.
80. (New) The tag of claim 75 further comprising a tuning circuit that tunes the first antenna to receive the wave at a frequency of between radio waves and ultraviolet, inclusive.
81. (New) The tag of claim 75 further comprising a non-volatile memory that provides at least part of the output data.
82. (New) The tag of claim 75 wherein the driver circuit drives the second antenna as a half-wave or quarter-wave reflector.
83. (New) The tag of claim 27, wherein the first antenna comprises a dipole antenna.
84. (New) The tag of claim 27, wherein the second antenna comprises a dipole antenna.
85. (New) The tag of claim 28, wherein the first antenna comprises a dipole antenna.
86. (New) The tag of claim 28, wherein the second antenna comprises a dipole antenna.

87. (New) The tag of claim 27, wherein the first and second antennas are a single antenna.
88. (New) The tag of claim 28, wherein the first and second antennas are a single antenna.
89. (New) An electronic integrated circuit tag comprising:  
a first antenna that receives an electromagnetic wave in a wavelength region of  
microwave to ultra violet, inclusive, converts the wave into electrical energy, and  
stores the electrical energy;  
a signal receiving system that receives input data from the first antenna and stores the  
data inside the tag;  
a power storage component that stores the energy received by the first antenna and  
supplies that energy to the integrated circuit;  
a data processing system that sends out a least a portion of the stored data; and  
a second antenna that transmits an output wave in a wavelength region of microwave to  
ultra violet, inclusive, outside of the integrated circuit tag.